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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/759,546

01/16/2004

Alan A. Fennema

A-72067/ENB/JML

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7590

09/20/2006

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EXAMINER

NGUYEN, PHILLIP

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/759,546	<b>Applicant(s)</b> FENNEMA ET AL.	
	<b>Examiner</b> Phillip Nguyen	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 12-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/21/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Acknowledgement***

1. Applicant has elected group I, claims 1-11 and withdrew group II, claims 12-20.

However, applicant has not indicated whether to traverse or not traverse. Only claims 1-11 will be considered and examined in this Office Action.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite "is operable" which is not clear. Any optical detector is "operable" to detect beam of light. Applicant is suggested to rewrite the claims such as --optical detector is arranged to...--

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

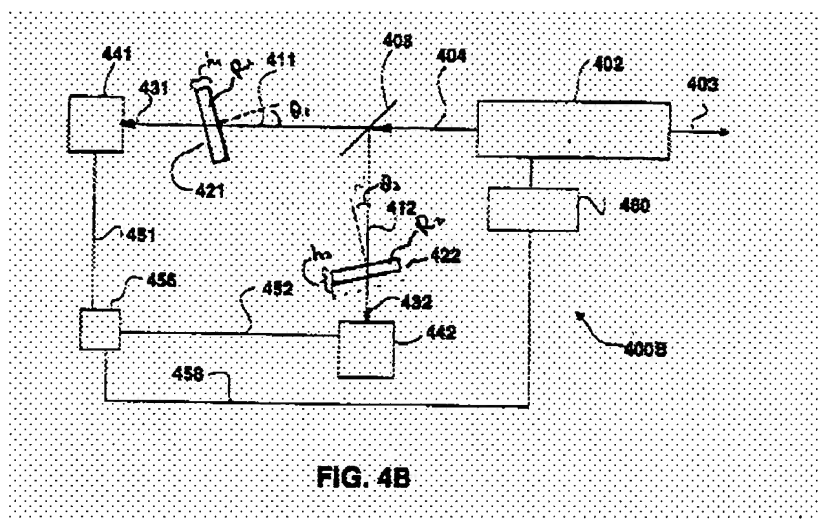
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2828

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 and 6-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yu (US Publication No. 20030007521).



With respect to claims 1-3, Yu discloses in Fig. 4A-4E a laser apparatus operable at a plurality of operating frequencies over an optical frequency range comprising a laser source 402 for generating an output beam of light having an output frequency, an output phase and an output power and for generating a reference beam of light, a first optical detector 441 for receiving at least a portion of the output beam of light 431 and generating a first signal 451, a second optical detector 442 for receiving at least a portion of the reference beam of light 432 and generating a second signal 452, a calibration memory for storing an optimum ratio of the first signal to the second signal and a control unit 456 coupled to the calibration memory and the first and second optical detectors and the laser source for generating at least one control signal based on the

Art Unit: 2828

optimum ratio. Note that Yu discloses the control unit 456 which is a signal processing unit includes a memory which has a look-up table for storing a plurality of optimum ratios as a function of respective operating frequencies and the control unit being operable to calculate said optimum ratio (paragraphs 0030 and 0037).

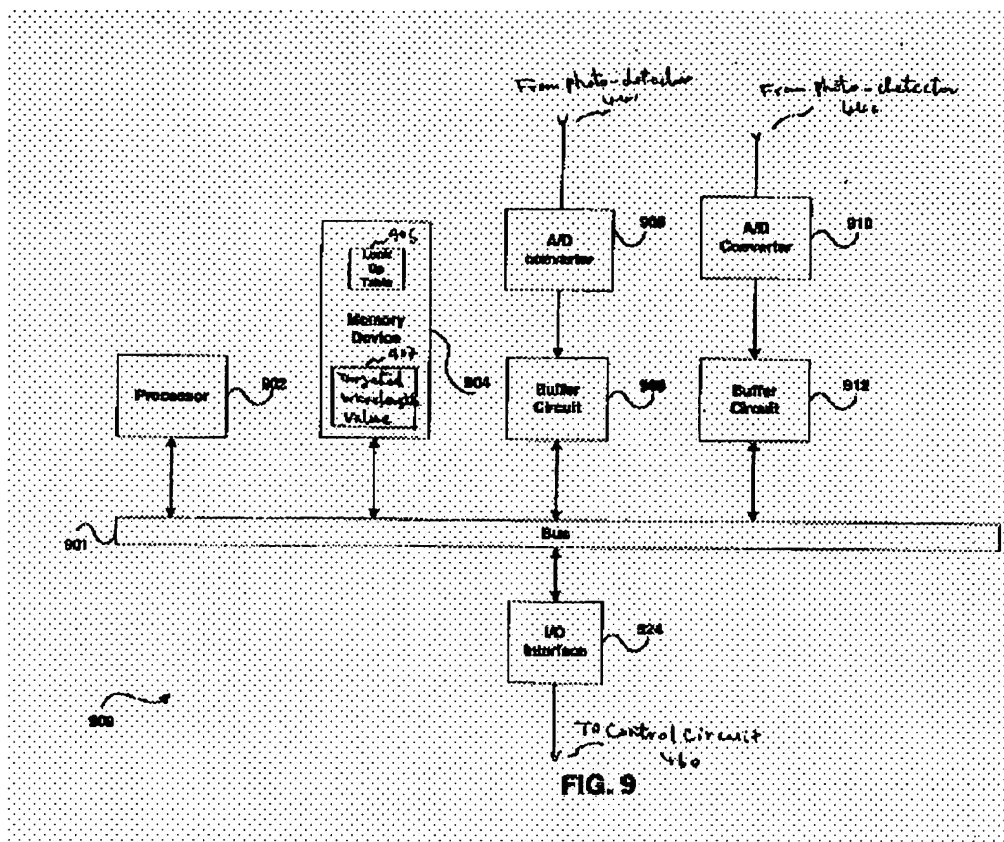
With respect to claim 6, Yu discloses the first optical detector 441 being operable to measure the power of at least a portion of the output beam of light for providing a representation of such measured power in the first signal (see paragraph 0037).

With respect to claim 7, Yu discloses an optical power divider 406 for dividing the reference beam of light into first and second portions 411 and 412 wherein the second optical detector is a part of a wavelength locker (400A-400E).

With respect to claim 8, Yu discloses the second optical detector being operable to measure the power of first portion 412 of the reference beam of light for providing a representation of such measured power in the second signal.

With respect to claim 9, Yu discloses the laser source includes a laser diode 402 (paragraph 0037).

With respect to claim 10, Yu discloses a control unit in Fig. 9 comprising at least one input port adapted to the calibration memory 904 to receive an optical power ratio from the calibration memory; at least one output port 924 adapted for coupling to the laser source to provide a laser control signal to the tunable laser; and a digital processor 902 connected to the at least one input port and at least one output port for utilizing the optimum power ratio to develop the control signal to the tunable laser.



4. Claims 1-3 and 6-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Kai et al. (US Patent No. 6782017). See Fig. 1-6, 9-10, 14, 18, 22, 25-26, 31, 32, and 39.

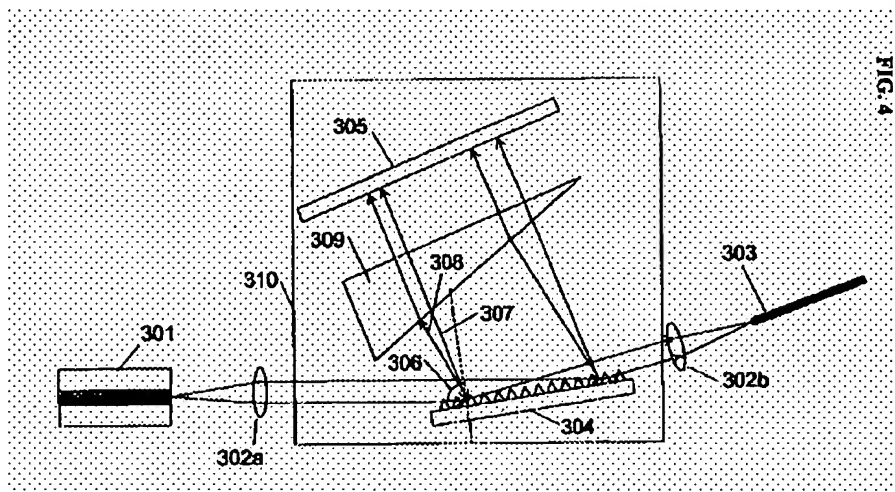
### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2828

5. Claims 4-5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (US Publication No. 20030007521) in view of Oh et al. (US Patent No. 6810047).



Yu discloses the claimed invention with the tunable laser except for explicitly teaches the laser source is part of a variable length optical resonator as claimed. Oh discloses a tunable laser with which is a part of a variable length optical resonator having a mirror 305 and a diffraction grating 304, the variable length optical resonator further comprises a first actuator coupled to the mirror and second actuator coupled to the grating for selecting the output frequency of the output of beam of light and the cavity length (col. 3, lines 9-11). It would have been obvious to the one having ordinary skill in the art at the time the invention was made to provide a wavelength tunable external cavity laser as taught by Oh to Yu in order to increase the tunable range (col. 4, lines 13-16). Although Oh does not explicitly teaches using a piezoelectric translator as the second actuator, it would have been obvious to the one having ordinary skill in the art at the time the invention was made to provide a piezoelectric translator to replace the MEMS and provide the circuits to control the MEMS and PZT as well.

Art Unit: 2828

***Communication Information***

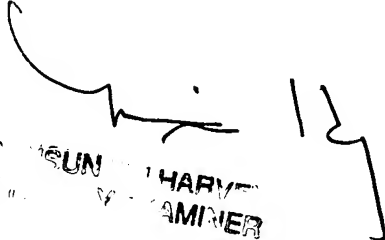
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Nguyen whose telephone number is 571-272-1947. The examiner can normally be reached on 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY, can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MINSUN HARVEY  
EXAMINER